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[Name of the Document] Abstract

[Abstract]

[Issue]

The present invention relates to an electronic camera and it has as its objective the providing of an electronic camera that makes it possible to understand the functions of the camera quickly, and makes any advanced functions easy to learn.

[Means of solution]

It is characterized by having Operation Input Means 1 to which the camera operations are input, Image-receptor Means 2 that takes a picture of the subject and creates images in correspondence to the image-reception operation of the camera received by Operation Input Means 1, Recording Means 3 that records the image created by Image-receptor Means 2 on a recording medium, Playback Means 4 that plays back the image that is recorded on the recording medium in correspondence to the playback operation of the camera received by Operation Input Means 1 and Mode Selection Means 5 that selects an operation instruction mode through the operation of an external mode selection, wherein in the state that the operation instruction mode is selected, when the camera operation is obtained by Operation Input Means 1, Playback Means 4 replays a guide that is provided in advance for the purpose of explaining the camera operation.

[Selected Drawing] Figure 1

[Name of the Document] Specifications

[Name of the Invention] Electronic Camera

[Scope of the Patent Claim]

[Claim 1]

An electronic camera having
a means for operation input by which the camera operations are input externally,
an image-receptor that takes a picture of the subject and creates images in
correspondence to the image-reception operation of the camera received by said means of
operation input,

a recording means that records the image created by said means of image-reception
on a recording medium,

a means of playback that plays back the image that is recorded on the recording
medium in correspondence to the playback operation of the camera received by said
means of operation input

a means of mode selection that selects an operation instruction mode through the
operation of an external mode selection,

wherein in the state that the operation instruction mode is selected, when the
camera operation is obtained by said means of operation input, said means of playback
replays a guide that is provided in advance for the purpose of explaining the camera
operation.

[Claim 2]

The electronic camera described in Claim 1 with characteristics such that

said guide, which is provided in advance, is stored on a recording medium that is detachable from the camera's main body,

and said means of mode selection selects said operation instruction mode when said recording medium is attached to the camera's main body.

[Detailed Description of the Invention]

[0001]

[Field of the Invention]

The present invention pertains to an electronic camera, in particular, an electronic camera that has an operation instruction mode that conducts an explanation of an operation when the camera operation is carried out.

[0002]

[Prior Arts]

In general, electronic cameras that record still images or moving images using image-receptor elements have been available. In particular, currently, digital cameras are being used by a wide range of people because they are easy to use to take pictures due to the fact that they do not require a developing process, such as a camera that uses silver-halide film.

[0003]

[Problems Solved by Invention]

The fact that these cameras are accepted by a wide range of people means there is an increase in the possibility of use by people who are not only inexperienced with operating a camera but also with mechanical operations in general.

[0004]

In order to learn how to operate a camera it is necessary to read the operation manual, however, in general, operation manuals are hard to understand and operators have to locate the necessary information a step at a time from the operation manual. Therefore, it takes effort and time for people who are inexperienced with mechanical operations to learn.

In addition, taking pictures is frequently conducted outdoors and therefore, people sometimes find themselves in a situation where they have to carry the operation manuals with them all the time until they get familiar with the camera's operations.

[0005]

Furthermore, and in particular, for the current electronic cameras that record moving images, not only do they have functions for taking pictures and replaying, but they also have advanced image-editing functions. With these electronic cameras, the number of operation button increases along with the complexity and sophistication of the functions. Therefore, the operation of the camera is even more difficult. Thus, in order for people to learn to use a camera's functions with adequate efficiency, it takes an even longer time.

[0006]

Therefore, in order to solve the above-mentioned problems, the invention described in Claim 1 has as an objective the providing of an electronic camera that makes it possible to understand the functions of the camera quickly, and makes any advanced functions easy to learn.

In addition to the objectives described in Claim 1, the invention described in Claim

2 has as an objective the providing of an electronic camera that makes it possible to eliminate the trouble of switching to the operation instruction mode.

[0007]

[Means to solve the problems]

Figure 1 shows the principle block diagram of the invention described in Claim 1.

The invention described in Claim 1 is characterized by having Operation Input Means 1 to which the camera operations are input externally, Image-receptor Means 2 that takes a picture of the subject and creates images in correspondence to the image-reception operation of the camera received by Operation Input Means 1, Recording Means 3 that records the image created by Image-receptor Means 2 on a recording medium, Playback Means 4 that plays back the image that is recorded on the recording medium in correspondence to the camera playback operation received by Operation Input Means 1 and Mode Selection Means 5 that selects the operation instruction mode through the operation of an external mode selection, wherein in the state that the operation instruction mode is selected, when the camera operation is obtained by Operation Input Means 1, Playback Means 4 plays back a guide that is provided in advance for the purpose of explaining the camera operation.

[0008]

Figure 2 shows the principle block diagram of the invention described in Claim 2.

The invention described in Claim 2 has characteristics such that a guide, which is provided in advance, is stored on a recording medium that is detachable from the camera's main body, and Mode Selection Means 5 selects the operation instruction mode when the

recording medium is attached to the camera's main body.

[0009]

[Effect]

With the electronic camera described in Claim 1, a camera operation from the operator is received by Operation Input Means 1. Image-Receptor Means 2 starts photo-taking of the subject and creates an image in correspondence to the camera operation (photographic operation).

Recording Means 3 records the image created by Image-receptor Means 2 on a recording medium.

[0010]

Playback Means 4 plays back images recorded on the recording medium in correspondence to the image reproduction operation of the camera (playback operation).

When an operator conducts the mode selection operation, Mode Selection Means 5 selects the operation instruction mode, and the electronic camera enters the state in which it is switched to the operation instruction mode.

[0011]

In the operation instruction mode, when a camera operation is carried out, the guide that explains the camera operation (hereinafter referred to as the operation instruction guide) is played back. This operation instruction guide can be either an image or sound.

In the electronic camera described in Claim 2, the operation instruction guide is stored on a recording medium that is detachable. When the recording medium is attached

to the main body of the camera, Mode Selection Means 5 conducts the selection of the operation instruction mode. For example, it is acceptable for the operation instruction mode to be selected either by determining whether the operation instruction guide is recorded on the recording medium or not, or the operation instruction mode is selected by detecting the attachment of the recording medium, regardless of whether the operation instruction guide is on it or not.

[0012]

[Embodiment of the Invention]

An embodiment of the present invention is described by using drawings as follows.

Figure 3 shows a structural block diagram of the present embodiment. Figure 4 shows the exterior of the present embodiment. The present embodiment corresponds to the invention described in Claims 1 and 2.

In Figure 3, Main Body 21 is comprised of Camera Portion 22. Inside Camera Portion 22, Photographic Lens 23 is located and Image-Receptor Element 24 is arranged at the location where the transmitted light through Photographic Lens is received. The image signal from Image-receptor Element 24 is input into MPU 26 via A/D Conversion Portion 25.

[0013]

MPU 26 is connected to Photo-magnetic Recording Medium 28 via Data Access Portion 27. This Photo-magnetic Recording Medium 28 is disc-shaped and it is possible to conduct random access and is detachable from Main Body 21.

In addition, the image output of MPU 26 is input to LCD Portion 29. LCD Portion

29 has Touch Screen 30 mounted on it, and the pressing operation sensed by Touch Screen 30 is input to MPU 26 as location information.

[0014]

Furthermore, the control output of MPU 26 is input to Lens Driving Portion 31 and Exposure Control Portion 32.

Also, the output of Operation Buttons 33 is input to MPU 26. Representing these Operation Buttons 33, there are the operation buttons shown in Figure 4, mounted on Main Body 21. Arranged on the upper portion of Main Body 21, there are Photography Button 34, Focus Button 38, Zoom Button 36, Exposure Button 37, and Mode Switching Button 38. In addition, mounted on the side portion, are External Output Terminal 40 and MO Attachment Portion 41.

[0015]

MPU 26 is comprised of a signal processing function that conducts image processing of the image signal of A/D Conversion Portion 25 and the image read out from Photo-magnetic Recording Medium 28, a control function that controls Data Access Portion 27, Lens Driving Portion 31 and Exposure Control Portion 32, an operation recognition function that recognizes the operation that is input through Touch Screen 30 and Operation Buttons 33, an image creation function that creates the image that is displayed on LCD Portion 29, and a mode selection function that conducts mode selection by the attachment of the photo-magnetic recording medium where an image that explains the camera operation (hereinafter referred to as the operation instruction image, which corresponds to the "guide" described in Claim 1) is stored and the mode switching

operation of Mode Switching Button 38.

[0016]

The correspondence between the invention described in Claims 1 and 2 and the present embodiment is as follows. Operation Input Means 1 corresponds to the operation recognition function of MPU 26, Touch Screen 30 and Operation Buttons 33. Image-receptor Means 2 corresponds to Photographic Lens 23, Image-receptor Element 24, A/D Conversion Portion 25, and the signal processing function and control function of MPU 26. Recording Means 3 corresponds to the control function of MPU 26 and Data Access Portion 27. Playback Means 4 corresponds to the control function and the image-creation function of MPU 26 and Data Access Portion 27. Mode Selection Means 5 corresponds to the mode selection function of MPU 26.

[0017]

The action of the present embodiment is described using Figures 3 to 7 as follows.

First, "Standard Mode" is described.

When it is switched to Standard Mode by Mode Switching Button 38, MPU 26 selects Standard Mode and the camera is set to Standard Mode. In Standard mode, the initial screen shown in Figure 5 is displayed on LCD Portion 29. On the bottom portion of the screen, there are operation buttons that are displayed for image playback. They are Reverse Button 42, Fast-Forward Button 43, Frame-Reverse Button 44, Pause Button 45, Frame-Advance Button 46, Reverse-Play Button 47, Stop Button 48 and Play Button 49, starting from the left side.

[0018]

All the operations of these operation buttons are conducted through Touch Screen 30 by utilizing well-known technology, such as, a GUI (Graphical User Interface). In other words, on LCD Portion 29, operation buttons are displayed as objects, and MPU 26 senses an operator's touching activity of these objects and depending on the operation, it reads out the image and displays it.

[0019]

In Standard Mode, standard actions are carried out by the operation of Operation Buttons 33 and the operation buttons for image playback.

In other words, for example, when Photography Button 34 is pressed, Image-receptor Element 24 conducts the photo-electric conversion of the image of the subject obtained through Photographic Lens 23, and the photo-electric signal is converted into a digital signal with A/D Conversion Portion 25. In addition, at MPU 26, image processing, such as, gamma ray adjustments, outline enhancement, and white balance adjustments are conducted and the data are compressed and encoded. The encoded image data is recorded as an image file on Photo-magnetic Recording Medium 28 via Data Access Portion 27.

[0020]

When Focus Button 35, Zoom Button 36 or Exposure Button 37 are operated, MPU 26 recognizes their operation and in correspondence to the operation, it controls Lens Driving Portion 31 and Exposure Control Portion 32, and conducts focus adjustment, zoom control and exposure adjustment.

In addition, when the operation button for image replaying is operated, in

correspondence to the operation, MPU 26 reads out the image from Photo-magnetic Recording Medium 28 and plays it back. For example, when Fast Forward Button 43 is pressed, MPU 26 creates a display image in which frames are dropped and displays it on LCD Portion 29.

[0021]

Next, "Operation Instruction Mode" is explained.

Photo-magnetic Recording Medium 28 has recorded in advance the operation instruction image for the purpose of explaining the operations of Operation Buttons 33 and the operation buttons for image playback. In the system region of Photo-magnetic Recording Medium 28, the information that indicates whether the operation instruction image is stored, is maintained as an inherent attribute of the disc.

[0022]

In addition, the operation instruction images are stored as separate image files for each operation button. In the file label of each image file, identification information is maintained that uses each operation button as its identification name.

When this Photo-magnetic Recording Medium 28 is attached via MO Attachment Portion 41, MPU 26 accesses the system region and determines whether operation instruction images exist or not using the inherent attributes of the disc.

[0023]

When operation instruction images exist, MPU 26 selects the operation instruction mode and the camera is automatically set to operation instruction mode.

In the ROM inside MPU 26, a sequence program for operation instruction mode

is stored. The program is read out and MPU 26 conducts the following action.

For the operation instruction mode, for example, assume Photography Button 34 is pressed.

[0024]

MPU 26 recognizes the operation (See Figure 6, Step 1 (S1)) and accesses the file label that has "Photography Button" as its identification name via Data Access Portion 27.

In the file label is the relative address of where the "operation instruction image data for the photography button" is stored and then, it reads the address and searches for the image data.

When the operation instruction image of Photography Button 34 is found, MPU 26 reads out this image data, decodes it and displays it on LCD Portion 29 (Figure 6, Steps 2 and 3 (S2, S3)).

[0025]

The contents of the operation instruction image are, for example, a visual image explanation of how to press the operation button or what kind of function will be carried out when the operation button is pressed.

For Focus Button 35, Zoom Button 36, Exposure Button 37, and the operation button for image playback, in a manner similar to the one described above, when the button is pressed, an operation instruction image that explains, for example, ordinary functions (functions for standard mode) is played back.

[0026]

Switching to operation instruction mode can be carried out by the mode switching

operation of Mode Switching Button 38 as well. Also, it is possible to record photographic images in the empty spaces of Photo-magnetic Recording Medium 28 where operation instruction images are stored.

(Effect of the Embodiment)

As described above, with the electronic camera described in the present embodiment, when someone cannot understand a camera operation, by just pressing an operation button, the operation instruction image about the operation button is played back. Therefore, without depending on an operations manual, it is possible to understand fully the camera function and even a beginner can become able to use the camera efficiently in a short period of time.

[0027]

The operation instruction image of the present embodiment is a moving image, however, it is not limited to that and it is possible to display text for the operation instructions. In addition, it is acceptable to give operation instructions through sound by storing sound data in Photo-magnetic Recording Medium 28.

Also, as for the recording medium, it is not limited to a photo-magnetic recording medium. A magnetic recording medium (which is not limited to a disc form and includes a tape form), an optical recording medium, or a semiconductor recording medium (memory card) can be used as well.

[0028]

It is possible to play back the operation instruction image for the operation of the image adjustment buttons, such as, Brightness Adjustment Button 50, White Balance

Adjustment Button 51 as shown in Figure 8. In addition, at this time, it is possible to display a sample image and actually adjust the quality of the sample image in correspondence to the operation of the image adjustment buttons. By doing this, the operator can learn about the operation of the image adjustment as they experience it.

[0029]

External Output Terminal 40 is a terminal to output images to devices, such as, personal computers. It is possible to play back images that instruct about the process of image capturing, when an output cable is connected to the terminal.

In addition, in the present embodiment there is only one kind of operation instruction image, however, it is not limited to this. It is possible to have an operation instruction mode that stores multiple kinds of operation instruction images (for example, instruction through moving images, instruction through text, instruction through sound, instruction in English) on the recording medium so that the operator can select from among them. In this case, if the sequence program of the operation instruction mode is stored on the same recording medium as the operation instruction image, the operation instruction image and the sequence program of the operation instruction mode can be changed at the same time.

[0030]

In addition, the operation instruction image is stored on detachable Photo-magnetic Recording Medium 28, however, it is not limited to this and it is possible to store it in the internal memory of the camera's main body.

Also, MPU 26 automatically selects the operation instruction mode when Photo-

magnetic Recording Medium 28, which stores the operation instruction image, is attached. However, it is not limited to this and it is possible to design the camera so that if there is no operation instruction image stored, it cannot be switched to the operation instruction mode. Furthermore, it is possible to not only automatically select the operation instruction mode but also to playback automatically the operation instruction image. At this time, as examples of the content of the operation instruction image, general instructions for the camera functions or instructions about the photographic process are appropriate.

[0031]

[Effect of the Invention]

The electronic camera described in Claim 1 has an operation instruction mode and when a camera operation is carried out, an operation instruction guide for the operation is played back.

Therefore, the operator can understand the functioning of the camera efficiently as well as quickly without relying on the operation manual. In addition, even if the camera operation is complicated it is possible to learn how to use it easily.

[0032]

In addition, it is possible to omit the production of the operation manual, therefore it is possible to reduce the costs of operation manual production.

For the electronic camera described in Claim 2, when a recording medium on which a guide image is stored is attached, it is automatically switched to the operation instruction mode. Therefore, it is possible to avoid the trouble of switching to the operation instruction mode.

As described above, the electronic camera using the present invention can be easily used by people who are inexperienced with camera operations.

[Simple Description of Drawings]

[Figure 1]

Principle block diagram of the invention described in Claim 1

[Figure 2]

Principle block diagram of the invention described in Claim 2

[Figure 3]

Structural block diagram of the present embodiment

[Figure 4]

Exterior of the present embodiment

[Figure 5]

Figure indicates initial screen

[Figure 6]

Flowchart of action of the operation instruction mode

[Figure 7]

Figure explaining embodiment

[Figure 8]

Figure indicates different screen

[Description of Part Numbers]

1. Operation Input Means

2. Image-receptor Means

- 3. Recording Means
- 4. Playback Means
- 5. Mode Selection Means
- 21. Main Body
- 22. Camera Portion
- 23. Photographic Lens
- 24. Image-receptor Element
- 25. A/D Conversion Portion
- 26. MPU
- 27. Data Access Portion
- 28. Photo-magnetic Recording Medium
- 29. LCD Portion
- 30. Touch Screen
- 31. Lens Driving Portion
- 32. Exposure Controlling Portion
- 33. Operation Button
- 34. Photography Button
- 35. Focus Button
- 36. Zoom Button
- 37. Exposure Button
- 38. Mode Switching Button
- 40. External Output Terminal

- 41. MO Attachment Portion
- 42. Reverse Button
- 43. Forward Button
- 44. Frame-reverse Button
- 45. Pause Button
- 46. Frame-advance Button
- 47. Reverse-play Button
- 48. Stop Button
- 49. Play Button
- 50. Brightness Adjustment Button
- 51. W. Balance Adjustment Button

[Name of the Document] Drawing

[Figure 1]

Principle block diagram of the invention described in Claim 1

1. Operation Input Means
2. Image-receptor Means
3. Recording Means
4. Playback Means
5. Mode Selection Means
 - a) Recording Medium
 - b) Camera Operation
 - c) Mode Selection Operation

[Figure 2]

Principle block diagram of the invention described in Claim 2

1. Operation Input Means
2. Image-receptor Means
3. Recording Means
4. Playback Means
5. Mode Selection Means
 - a) Recording Medium
 - b) Camera Operation
 - c) Detachable

[Figure 3]

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Structural block diagram of the present embodiment

21. Main Body

22. Camera Portion

23. Photographic Lens

24. Image-receptor Element

25. A/D

26. MPU

27. Data Access Portion

28. Photo-magnetic Recording Medium

29. LCD Portion

30. Touch Screen

31. Lens Driving Portion

32. Exposure Control Portion

33. Operation Buttons

40.

[Figure 4]

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Exterior of the present embodiment

21. Main Body

22. Camera Portion

23. Photographic Lens

34. Photography Button

35. Focus Button

36. Zoom Button

37. Exposure Button

38. Mode Switching Button

40. External Output Terminal

41. MO Attachment Portion

[Figure 5]

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Figure indicates initial screen

29. LCD Portion

42. Reverse Button

43. Fast-forward Button

44. Frame-reverse Button

45. Pause Button

46. Frame-advance Button

47. Reverse-play Button

48. Stop Button

49. Play Button

[Figure 6]

a) Flowchart of action of the operation instruction mode

b) Start

S1

MPU identifies which operation button is pressed.

S2

Reads out operation instruction image that corresponds to the operation button based on the information of the file label.

S3

MPU encodes and LCD portion displays operation instruction image.

[Figure 7]

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1) Figure explaining embodiment

(a) Regular Mode

(b) When Photography Button 34 is pressed, the photographic action is carried out.

34. Photography Button

(c) Operation Instruction Mode

(d) When Photography Button 34 is pressed, an image that explains the operation is displayed on LCD Portion 29.

29. LCD Portion

34. Photography Button

[Figure 8]

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1) Figure indicates different screen

29. LCD Portion

(a) Brightness

50. Brightness Adjustment Button

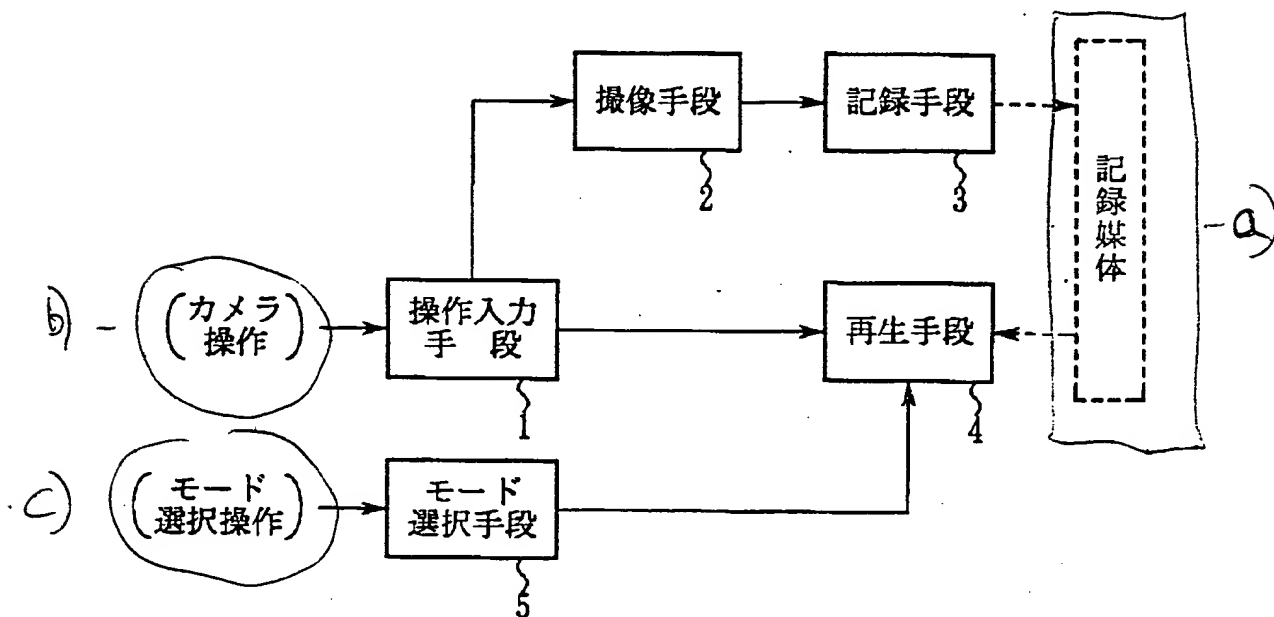
(b) W. balance

51. W. balance Adjustment Button

【書類名】 図面

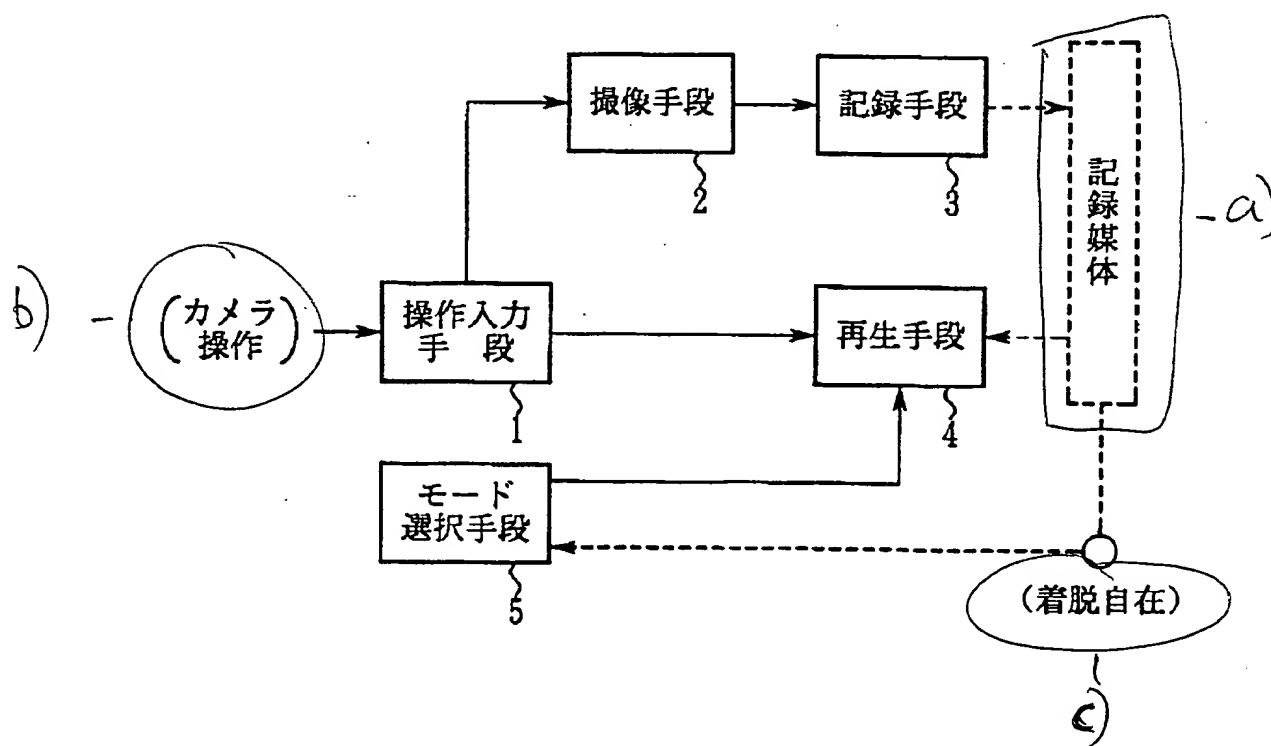
【図1】 Figure 1

請求項1に記載の発明の原理ブロック図

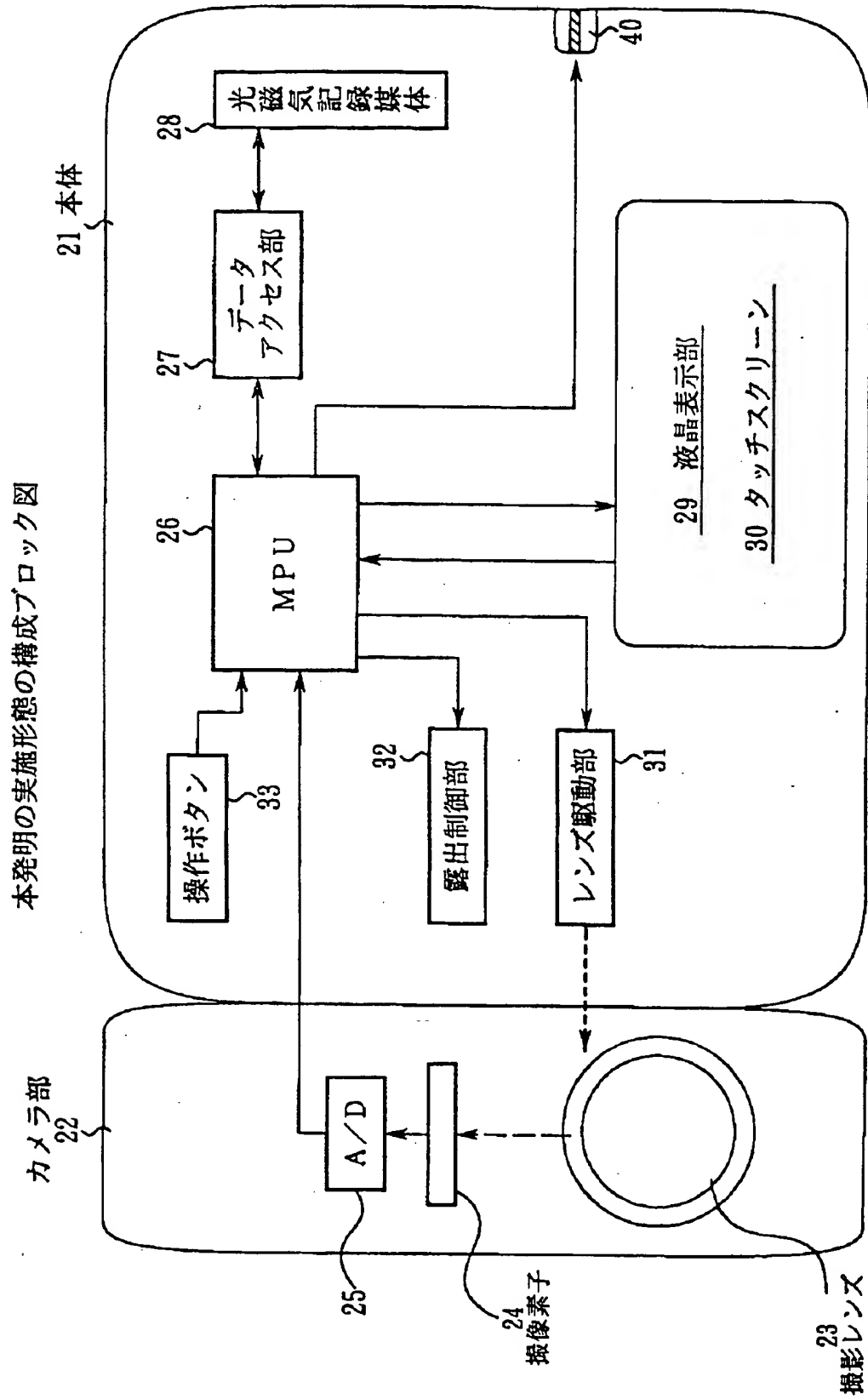


【図2】 Figure 2

請求項2に記載の発明の原理ブロック図

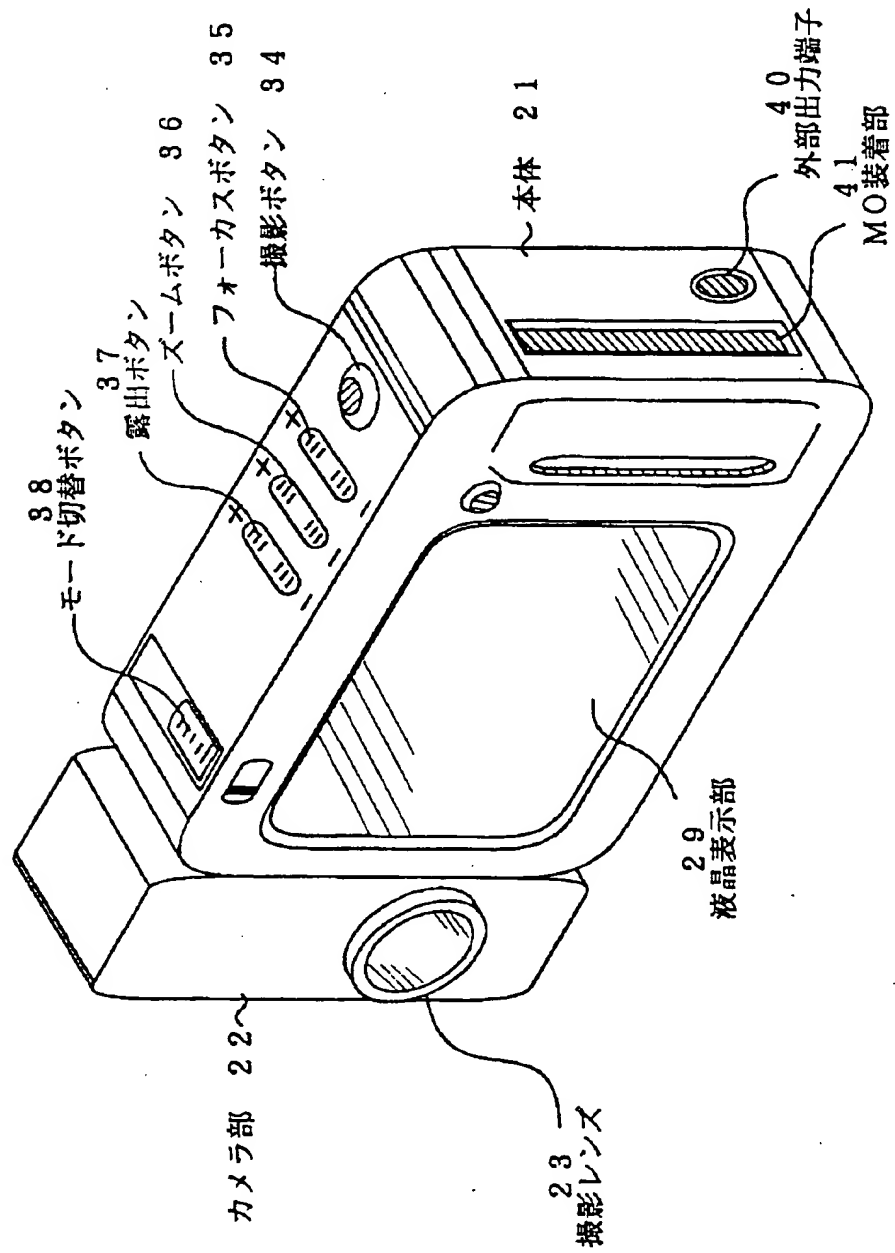


【図3】 Figure 3



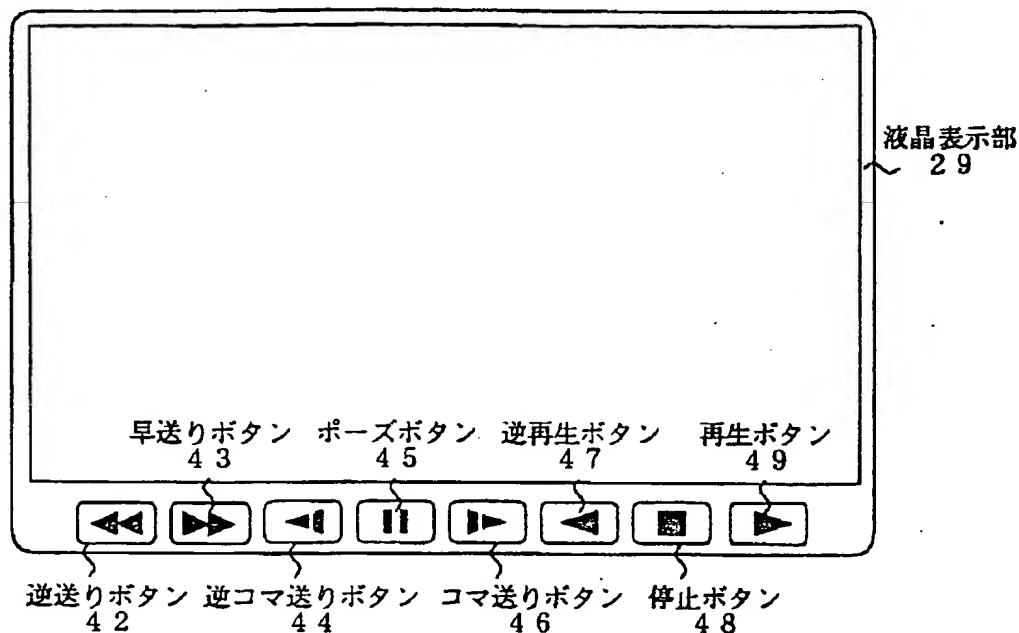
【図4】 Figure 4

本発明の実施形態の外観図

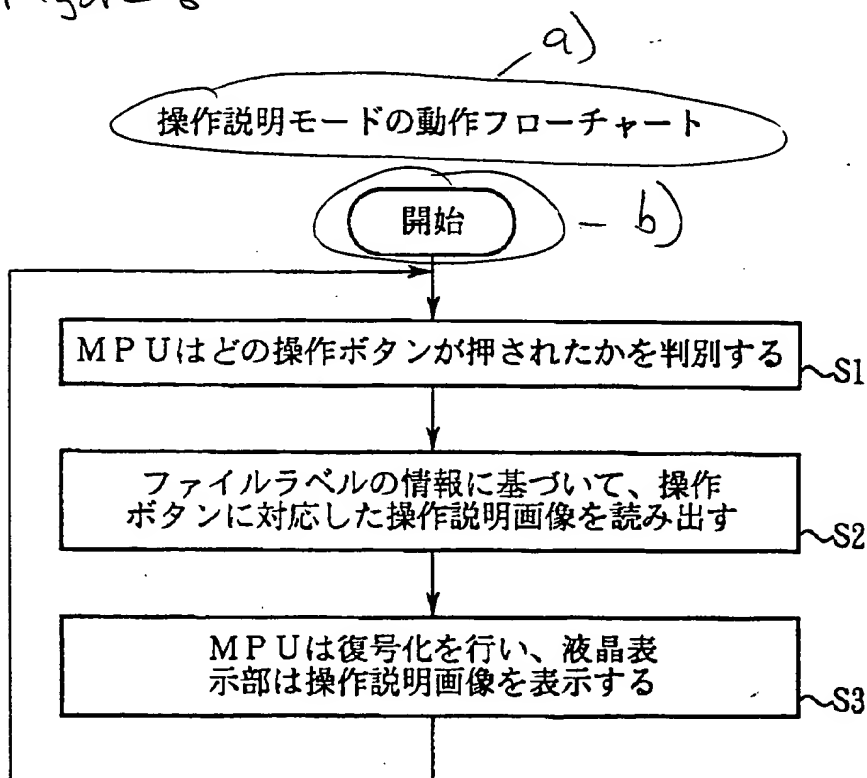


【図5】 Figure 5

初期画面を示す図



【図6】 Figure 6

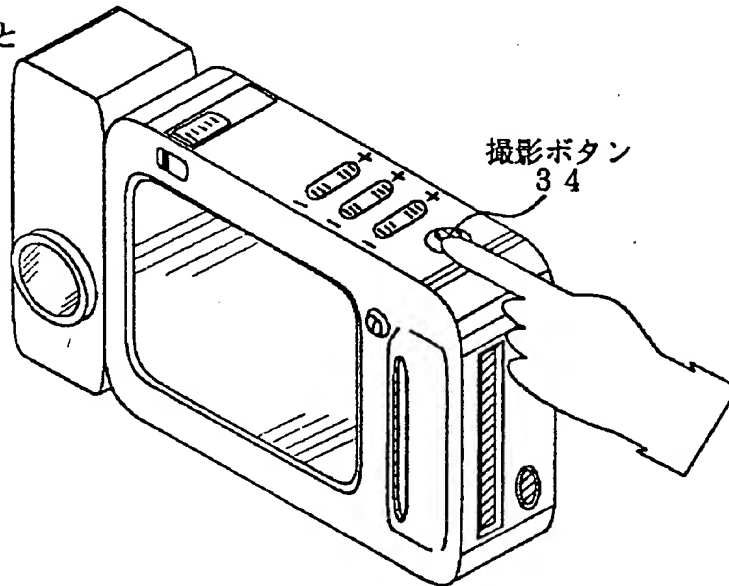


【図7】 Figure 7

実施形態を説明する図

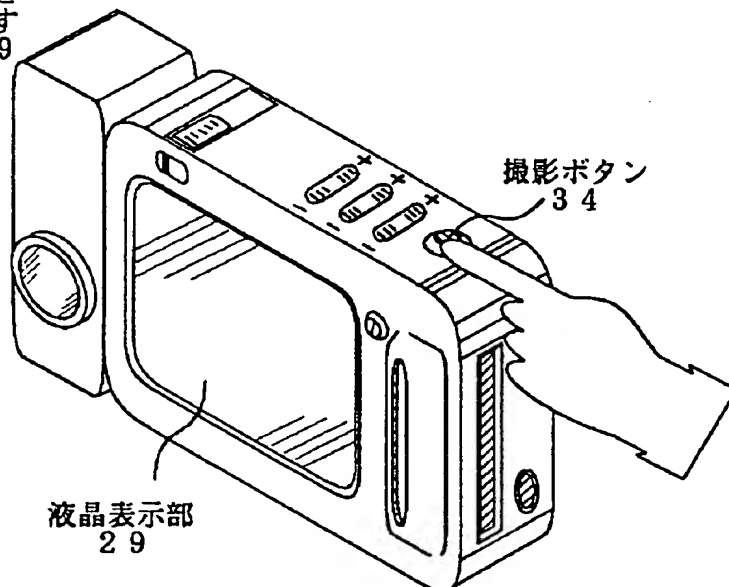
a) 通常モード

b) 撮影ボタン34を押すと
撮影動作が行われる



c) 操作説明モード

d) 撮影ボタン34を押すと
その操作について説明する
画像が液晶表示部29
に表示される



【図8】 Figure 8

